

BEST AVAILABLE COPY **PCT****REQUEST**

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

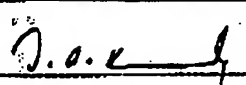
Applicant's or agent's file reference  
(if desired) (12 characters maximum) tmk.2847.pct.ac.e

<b>Box No. I TITLE OF INVENTION</b> Liner Retention System	
<b>Box No. II APPLICANT</b> <input type="checkbox"/> This person is also inventor	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)	
Spicket Valves and Pumps Limited Lawpark Farm Lochwinnoch Road Kilmacollm Renfrewshire, PA13 4TA United Kingdom	
State (that is, country) of nationality: GB	Telephone No. Facsimile No. Teleprinter No. Applicant's registration No. with the Office
State (that is, country) of residence: GB	
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input checked="" type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<b>Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)</b>	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)	
KENNEDY, George Coulter Lawpark Farm Lochwinnoch Road Renfrewshire, PA13 4TA United Kingdom	
State (that is, country) of nationality: GB	This person is: <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only (If this check-box is marked, do not fill in below.) Applicant's registration No. with the Office
State (that is, country) of residence: GB	
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<input type="checkbox"/> Further applicants and/or (further) inventors are indicated on a continuation sheet.	
<b>Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE</b>	
The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: <input checked="" type="checkbox"/> agent <input type="checkbox"/> common representative	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
Kennedys Patent Agency Limited Floor 5, Queens House 29 St Vincent Place GLASGOW G1 2DT United Kingdom	
Telephone No. 0141 226 6826 Facsimile No. 0141 226 6838 Teleprinter No. Agent's registration No. with the Office	
<input type="checkbox"/> Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.	

Sheet No. ... 2 ...

<b>Box No. V DESIGNATIONS</b>				
<p>The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents. However,</p> <p><input type="checkbox"/> DE Germany is not designated for any kind of national protection</p> <p><input type="checkbox"/> KR Republic of Korea is not designated for any kind of national protection</p> <p><input type="checkbox"/> RU Russian Federation is not designated for any kind of national protection</p> <p><i>(The check-boxes above may be used to exclude (irrevocably) the designations concerned in order to avoid the ceasing of the effect, under the national law, of an earlier national application from which priority is claimed. See the Notes to Box No. V as to the consequences of such national law provisions in these and certain other States.)</i></p>				
<b>Box No. VI PRIORITY CLAIM</b>				
The priority of the following earlier application(s) is hereby claimed:				
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country of Member of WTO	regional application: regional Office	international application: receiving Office
item (1) 29/05/03	0312249.6	GB		
item (2)				
item (3)				
<p><input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.</p> <p>The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of this international application is the receiving Office) identified above as:</p> <p><input type="checkbox"/> all items    <input checked="" type="checkbox"/> item (1)    <input type="checkbox"/> item (2)    <input type="checkbox"/> item (3)    <input type="checkbox"/> other, see Supplemental Box</p> <p>* Where the earlier application is an ARIPO application, indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organisation for which that earlier application was filed (Rule 4.10(b)(ii)).</p>				
<b>Box No. VII INTERNATIONAL SEARCHING AUTHORITY</b>				
<p>Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):</p> <p>ISA / .....</p> <p>Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):</p> <p>Date (day/month/year)                      Number                      Country (or regional Office)</p>				
<b>Box No. VIII DECLARATIONS</b>				
<p>The following declarations are contained in Boxes Nos. VIII (i) to (v) (mark the applicable check-boxes below and indicate in the right column the number of each type of declaration):</p>				Number of declarations
<input type="checkbox"/> Box No. VIII (i)	Declaration as to the identity of the inventor			
<input type="checkbox"/> Box No. VIII (ii)	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent			
<input type="checkbox"/> Box No. VIII (iii)	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application			
<input type="checkbox"/> Box No. VIII (iv)	Declaration of inventorship (only for the purposes of the designation of the United States of America)			
<input type="checkbox"/> Box No. VIII (v)	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty			

Sheet No. 3

Box No. IX CHECK LIST: LANGUAGE OF FILING		Number of items
<p>This international application contains:</p> <p>(a) In paper form, the following number of sheets:</p> <p>request (including declaration sheets) : 3</p> <p>description (excluding sequence listing and/or tables related thereto) : 10</p> <p>claims : 3</p> <p>abstract : 1</p> <p>drawings : 1</p> <p>Sub-total number of sheets : 18</p> <p>sequence listing : </p> <p>tables related thereto : </p> <p>(for both, actual number of sheets if filed in paper form, whether or not also filed in computer readable form; see (c) below)</p> <p>Total number of sheets : 18</p> <p>(b) <input type="checkbox"/> only in computer readable form (Section 801(a)(i))</p> <p>(i) <input type="checkbox"/> sequence listing</p> <p>(ii) <input type="checkbox"/> tables related thereto</p> <p>(c) <input type="checkbox"/> also in computer readable form (Section 801(a)(ii))</p> <p>(i) <input type="checkbox"/> sequence listing</p> <p>(ii) <input type="checkbox"/> tables related thereto</p> <p>Type and number of carriers (diskette, CD-ROM, CD-R or other) on which are contained the</p> <p><input type="checkbox"/> sequence listing: .....</p> <p><input type="checkbox"/> tables related thereto: .....</p> <p>(additional copies to be indicated under items 9(ii) and/or 10(ii), in right column)</p>		<p>This international application is accompanied by the following item(s) (mark the applicable check-boxes below and indicate in right column the number of each item):</p> <p>1. <input type="checkbox"/> fee calculation sheet</p> <p>2. <input type="checkbox"/> original separate power of attorney</p> <p>3. <input type="checkbox"/> original general power of attorney</p> <p>4. <input type="checkbox"/> copy of general power of attorney; reference number, if any: .....</p> <p>5. <input type="checkbox"/> statement explaining lack of signature</p> <p>6. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): .....</p> <p>7. <input type="checkbox"/> translation of international application into (language): .....</p> <p>8. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material</p> <p>9. <input type="checkbox"/> sequence listing in computer readable form (indicate type and number of carriers)</p> <p>(i) <input type="checkbox"/> copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international application)</p> <p>(ii) <input type="checkbox"/> (only where check-box (b)(i) or (c)(i) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Rule 13ter</p> <p>(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the sequence listing mentioned in left column</p> <p>10. <input type="checkbox"/> tables in computer readable form related to sequence listing (indicate type and number of carriers)</p> <p>(i) <input type="checkbox"/> copy submitted for the purposes of international search under Section 802(b-quater) only (and not as part of the international application)</p> <p>(ii) <input type="checkbox"/> (only where check-box (b)(ii) or (c)(ii) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Section 802(b-quater)</p> <p>(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the tables mentioned in left column</p> <p>11. <input type="checkbox"/> other (specify): .....</p>
Figure of the drawings which should accompany the abstract: 1	Language of filing of the international application: English	
<p>Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE</p> <p>Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).</p> <p></p> <p>David Kennedy Kennedys Patent Agency Limited 26 May 2004</p>		

For receiving Office use only	
1. Date of actual receipt of the purported international application:	<p>2. Drawings:</p> <p><input type="checkbox"/> received:</p> <p><input type="checkbox"/> not received:</p>
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid
For International Bureau use only	
Date of receipt of the record copy by the International Bureau:	

## INTERNATIONAL SEARCH REPORT

National Application No.

EP/GB2004/002253

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 F04B53/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US R E37 483 E (FLINDALL STEPHEN J ET AL) 26 December 2001 (2001-12-25) cited in the application the whole document	1-13
A	US 6 209 445 B1 (ROBERTS JR EMMETT T ET AL) 3 April 2001 (2001-04-03) column 2, line 49 - column 3, line 11	1,12
A	DE 32 18 000 A (WIRTH CO KG MASCH BOHR) 24 November 1983 (1983-11-24) claim 1; figures 4,5	1,12
A	DE 23 56 604 A (WAGNER MASCHF PAUL HEINZ) 15 May 1975 (1975-05-15) claim 1	1,12
	----- -/-	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in Annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle of the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- \*A\* document member of the same patent family

Date of the actual completion of the international search

17 September 2004

Date of mailing of the international search report

24/09/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel (+31-70) 940-2040, Tx 81 651 epo nl  
Fax (+31-70) 340-3016

Authorized officer

Fistas, N



## INTERNATIONAL SEARCH REPORT

International Application No.

/GB2004/002253

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US RE37483	E	25-12-2001	US RE37483 E1	25-12-2001
			GB 2285489 A, B	12-07-1995
			US 5572920 A	12-11-1996
US 6209445	B1	03-04-2001	AU 6023899 A	27-03-2000
			CA 2342779 A1	16-03-2000
			GB 2360331 A, B	19-09-2001
			WO 0014406 A2	16-03-2000
DE 3218000	A	24-11-1983	DE 3218000 A1	24-11-1983
DE 2356604	A	15-05-1975	DE 2356604 A1	15-05-1975
US 4550646	A	05-11-1985	NONE	

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA220

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)Date of mailing  
(day/month/year) see form PCT/ISA210 (second sheet)Applicant's or agent's file reference  
see form PCT/ISA220.FOR FURTHER ACTION  
See paragraph 2 belowInternational application No.  
PCT/GB2004/002253International filing date (day/month/year)  
26.05.2004Priority date (day/month/year)  
29.05.2003International Patent Classification (IPC) or both national classification and IPC  
F04B53/00

Applicant

SPICKET VALVES AND PUMPS LIMITED

## 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 56.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA220.

## 3. For further details, see notes to Form PCT/ISA220.

Name and mailing address of the ISA:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized Officer

Fistas, N

Telephone No. +49 89 2399-2836



IAP16 Rec'd PCT/PTO 2:8 NOV 2005

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**International application No.  
PCT/GB2004/002253**Box No. I Basis of the opinion**

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the International application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**International application No.  
**PCT/GB2004/002253****Box No. II Priority**1. ☒ The following document has not been furnished:☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)

Yes: Claims

1-13

No: Claims

Inventive step (IS)

Yes: Claims

1-13

No: Claims

Industrial applicability (IA)

Yes: Claims

1-13

No: Claims

2. Citations and explanations

see separate sheet

**Box No. VII Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

see separate sheet

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

IP16 Rec'd PCT/PTO 23 NOV 2005

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/GB2004/002253

**Item V.**

1. The invention relates to an apparatus for securing a liner to a pumping module (cf. claim 1) and a method of securing a cylinder to a pumping module of a pump (cf. claim 12).

The nearest prior art is US RE37 483 cited in the search report and the description on page 2, line 11.

The problem to be solved is to provide a simple handling of the securing arrangement and to absorb shock if the pumping module is switched on at a high rate.

Since the arrangement of a piston acting on a tension plate resulting in an initial compression of an elastomeric member followed by release thereof due to the tightening of a nut toward the pumping module for such a cylinder liner is not contained in any of the prior documents, the subject-matter defined in claims 1 and 12 is new. Furthermore, said subject-matter is considered to be inventive because none of the cited documents or combination thereof contains any hint that could lead in an obvious way to the combination of features described in the independent claims 1 and 12.

The subject-matter of the dependent claims 2-11 and 13 is considered to be new and inventive, since they concern embodiments of the apparatus and the method defined in claim 1 and 12, from which the above mentioned claims depend respectively.

**Item VII.**

2. In claim 1 the expression "stud rod" is used. However, in claim 12 and in the description on page 7, line 1 for the same part the expression "stud bolt" is used. This is an inconsistency in the terminology used in the application (Article 6 PCT).
3. In the single figure 1 the reference sign 23 appears twice for the space between the piston 8 and the housing 7 and for the top plate of the housing (cf. page 8, line 18). This is an inconsistency between the claims, the description and the drawing.

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/GB2004/002253

(Article 6 PCT).

4. In the independent method claim 12 for the same part the expressions "elastomeric unit" (cf. line 6) and "elastomeric member" (cf. line 24) have been used. This is an inconsistency in claim 6 (Article 6 PCT).
5. The vague and imprecise statement in the description on page 9, line 27 to page 10, line 3 implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT) when used to interpret them.

**Item VIII.**

6. Independent claims 1 and 12 are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document US RE 37 483) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
7. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

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- ☐ **OTHER:** \_\_\_\_\_

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